

General

Title

Surgical care improvement project: percent of patients whose prophylactic antibiotics were discontinued within 24 hours after *surgery end time*.

Source(s)

Specifications manual for national hospital inpatient quality measures, version 3.1a. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2010 Apr 1. various p.

Measure Domain

Primary Measure Domain

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the [Measure Validity](#) page.

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percent of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after *Anesthesia End Time* (within 48 hours for coronary artery bypass graft [CABG] or other cardiac surgery).

Rationale

A goal of prophylaxis with antibiotics is to provide benefit to the patient with as little risk as possible. It is important to maintain therapeutic serum and tissue levels throughout the operation. Intraoperative re-dosing may be needed for long operations. However, administration of antibiotics for more than a few hours after the incision is closed offers no additional benefit to the surgical patient. Prolonged

administration does increase the risk of *Clostridium difficile* infection and the development of antimicrobial resistant pathogens.

Primary Clinical Component

Surgical care infection prevention; timely discontinuation of prophylactic antibiotics; coronary artery bypass graft (CABG); other cardiac surgery; hip arthroplasty; knee arthroplasty; colon surgery; hysterectomy; vascular surgery

Denominator Description

All selected surgical patients with no evidence of prior infection (see the related "Denominator Inclusions/Exclusions" field and Appendix A, Table 5.10 AND Tables 5.01 - 5.08 of the Specifications Manual for the list of selected surgeries)

Numerator Description

Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after anesthesia end time (48 hours for coronary artery bypass graft [CABG] or other cardiac surgery)

Evidence Supporting the Measure

Evidence Supporting the Criterion of Quality

A clinical practice guideline or other peer-reviewed synthesis of the clinical evidence

A systematic review of the clinical literature

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

Need for the Measure

Use of this measure to improve performance

Evidence Supporting Need for the Measure

Bratzler DW, Houck PM, Surgical Infection Prevention Guidelines Writers Workgroup, American Academy of Orthopaedic Surgeons, American Association of Critical Care Nurses, American Association of Nurse Anesthetists, American College of Surgeons, American College of Osteopathic Surgeons, American Geriatrics Society, American Society of Anesthesiologists, American Society of Colon and Rectal Surgeons, American Society of Health-System Pharmacists, American Society of PeriAnesthesia Nurses, Ascension Health, Association of periOperative Registered Nurses, Association for Professionals in Infection Control and Epidemiology, Infectious Diseases Society of America, Medical Letter, Premier, Society for Healthcare Epidemiology of America, Society of Thoracic Surgeons, Surgical Infection Society. Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Clin Infect Dis. 2004 Jun 15;38(12):1706-15. [90 references] [PubMed](#)

Crabtree TD, Pelletier SJ, Gleason TG, Pruett TL, Sawyer RG. Clinical characteristics and antibiotic utilization in surgical patients with Clostridium difficile-associated diarrhea. Am Surg. 1999 Jun;65(6):507-11; discussion 511-2. [PubMed](#)

Edwards FH, Engelman RM, Houck P, Shahian DM, Bridges CR, Society of Thoracic Surgeons. The Society of Thoracic Surgeons Practice Guideline Series: Antibiotic Prophylaxis in Cardiac Surgery, Part I: Duration. Ann Thorac Surg. 2006 Jan;81(1):397-404. [PubMed](#)

Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR, Hospital Infection Control Practices Advisory Committee. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee. Infect Control Hosp Epidemiol. 1999 Apr;20(4):250-78; quiz 279-80. [497 references] [PubMed](#)

McDonald M, Grabsch E, Marshall C, Forbes A. Single- versus multiple-dose antimicrobial prophylaxis for major surgery: a systematic review. Aust N Z J Surg. 1998 Jun;68(6):388-96. [82 references] [PubMed](#)

Scher KS. Studies on the duration of antibiotic administration for surgical prophylaxis. Am Surg. 1997 Jan;63(1):59-62. [PubMed](#)

State of Use of the Measure

State of Use

Current routine use

Current Use

Accreditation

Collaborative inter-organizational quality improvement

External oversight/Medicaid

External oversight/Medicare

Internal quality improvement

National reporting

Pay-for-performance

Application of Measure in its Current Use

Care Setting

Hospitals

Professionals Responsible for Health Care

Measure is not provider specific

Lowest Level of Health Care Delivery Addressed

Single Health Care Delivery Organizations

Target Population Age

Age greater than or equal to 18 years

Target Population Gender

Either male or female

Stratification by Vulnerable Populations

Unspecified

Characteristics of the Primary Clinical Component

Incidence/Prevalence

See the "Burden of Illness" field.

Association with Vulnerable Populations

Unspecified

Burden of Illness

The second most common cause of nosocomial infections is surgical site infections. Surgical site infections occur in 2-5% of clean extra-abdominal surgeries and up to 20% of intra-abdominal surgeries. Patients who develop surgical site infections are 60% more likely to spend time in an intensive care unit (ICU), five times more likely to be readmitted to the hospital and have twice the incidence of mortality. The costs of postoperative complications have been associated with an average increase in payment of 54% per patient. Despite advances in infection control practices, surgical site infections remain a substantial cause of morbidity and mortality among hospitalized patients. Studies indicate that appropriate preoperative administration of antibiotics is effective in preventing infection. Systemic and process changes that promote compliance with established guidelines and standards can decrease infectious morbidity.

Evidence for Burden of Illness

Auerbach AD. Prevention of surgical site infections. In: University of California at San Francisco (USCF) Stanford University Evidence-based Practice Center. Making health care safer: a critical analysis of patient safety practices. Online ed. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2002. p. 221-230. (Evidence Report/Technology Assessment; no. 43).

Bratzler DW, Houck PM, Surgical Infection Prevention Guidelines Writers Workgroup, American Academy of Orthopaedic Surgeons, American Association of Critical Care Nurses, American Association of Nurse Anesthetists, American College of Surgeons, American College of Osteopathic Surgeons, American

Geriatrics Society, American Society of Anesthesiologists, American Society of Colon and Rectal Surgeons, American Society of Health-System Pharmacists, American Society of PeriAnesthesia Nurses, Ascension Health, Association of periOperative Registered Nurses, Association for Professionals in Infection Control and Epidemiology, Infectious Diseases Society of America, Medical Letter, Premier, Society for Healthcare Epidemiology of America, Society of Thoracic Surgeons, Surgical Infection Society. Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Clin Infect Dis. 2004 Jun 15;38(12):1706-15. [90 references] [PubMed](#)

Burke JP. Infection control - a problem for patient safety. N Engl J Med. 2003 Feb 13;348(7):651-6. [PubMed](#)

Delgado-Rodriguez M, Sillero-Arenas M, Medina-Cuadros M, Martinez-Gallego G. Nosocomial infections in surgical patients: comparison of two measures of intrinsic patient risk. Infect Control Hosp Epidemiol. 1997 Jan;18(1):19-23. [PubMed](#)

Dimick JB, Weeks WB, Karia RJ, Das S, Campbell DA Jr. Who pays for poor surgical quality? Building a business case for quality improvement. J Am Coll Surg. 2006 Jun;202(6):933-7. [PubMed](#)

Edwards FH, Engelman RM, Houck P, Shahian DM, Bridges CR, Society of Thoracic Surgeons. The Society of Thoracic Surgeons Practice Guideline Series: Antibiotic Prophylaxis in Cardiac Surgery, Part I: Duration. Ann Thorac Surg. 2006 Jan;81(1):397-404. [PubMed](#)

Horan TC, Culver DH, Gaynes RP, Jarvis WR, Edwards JR, Reid CR. Nosocomial infections in surgical patients in the United States, January 1986-June 1992. National Nosocomial Infections Surveillance (NNIS) System. Infect Control Hosp Epidemiol. 1993 Feb;14(2):73-80. [PubMed](#)

Kirkland KB, Briggs JP, Trivette SL, Wilkinson WE, Sexton DJ. The impact of surgical-site infections in the 1990s: attributable mortality, excess length of hospitalization, and extra costs. Infect Control Hosp Epidemiol. 1999 Nov;20(11):725-30. [PubMed](#)

Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee. Infect Control Hosp Epidemiol. 1999;20(4):250-78; quiz 279-80.

National Nosocomial Infections Surveillance (NNIS) report, data summary from October 1986-April 1996, issued May 1996. A report from the National Nosocomial Infections Surveillance (NNIS) System. Am J Infect Control. 1996 Oct;24(5):380-8. [PubMed](#)

Scheel O, Stormark M. National prevalence survey on hospital infections in Norway. J Hosp Infect. 1999 Apr;41(4):331-5. [PubMed](#)

Wallace WC, Cinat M, Gornick WB, Lekawa ME, Wilson SE. Nosocomial infections in the surgical intensive care unit: a difference between trauma and surgical patients. Am Surg. 1999 Oct;65(10):987-90. [PubMed](#)

Utilization

See the "Burden of Illness" field.

Costs

See the "Burden of Illness" field.

Institute of Medicine (IOM) Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Timeliness

Data Collection for the Measure

Case Finding

Users of care only

Description of Case Finding

Discharges, 18 years of age and older, with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Principal Procedure Code of selected surgeries as defined in the appendices of the original measure documentation with no evidence of prior infection

Denominator Sampling Frame

Patients associated with provider

Denominator Inclusions/Exclusions

Inclusions

Discharges, 18 years of age and older, with an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) Principal Procedure Code of selected surgeries* as defined in the appendices of the original measure documentation with no evidence of prior infection

*Selected surgeries:

- Coronary artery bypass graft (CABG)
- Other cardiac surgery
- Hip arthroplasty
- Knee arthroplasty
- Colon surgery
- Hysterectomy
- Vascular surgery

Exclusions

- Patients less than 18 years of age
- Patients who have a Length of Stay (LOS) greater than 120 days
- Patients who had a principal diagnosis suggestive of preoperative infectious diseases (as defined in Appendix A, Table 5.09 of the original measure documentation for ICD-9-CM codes)
- Patients whose ICD-9-CM principal procedure was performed entirely by *Laparoscope*

Patients enrolled in clinical trials

Patients whose ICD-9-CM principal procedure occurred prior to the date of admission

Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA) documented infection prior to surgical procedure of interest

Patients who expired perioperatively

Patients who had other procedures requiring general or spinal anesthesia that occurred within three days (four days for CABG or Other Cardiac Surgery) prior to or after the procedure of interest (during separate surgical episodes) during this hospital stay

Patients who were receiving antibiotics more than 24 hours prior to surgery (except colon surgery patients taking oral prophylactic antibiotics)

Patients who were receiving antibiotics within 24 hours prior to arrival (except colon surgery patients taking oral prophylactic antibiotics)

Patients who did not receive any antibiotics during this hospitalization

Patients who received urinary antiseptics only (as defined in Appendix C, Table 3.11 of the original measure documentation)

Patients with reasons to extend antibiotics

Relationship of Denominator to Numerator

All cases in the denominator are equally eligible to appear in the numerator

Denominator (Index) Event

Institutionalization

Therapeutic Intervention

Denominator Time Window

Time window brackets index event

Numerator Inclusions/Exclusions

Inclusions

Number of surgical patients whose prophylactic antibiotics were discontinued within 24 hours after anesthesia end time (48 hours for coronary artery bypass graft [CABG] or other cardiac surgery)

Exclusions

None

Measure Results Under Control of Health Care Professionals, Organizations and/or Policymakers

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

Numerator Time Window

Fixed time period

Data Source

Administrative data

Medical record

Level of Determination of Quality

Individual Case

Pre-existing Instrument Used

Unspecified

Computation of the Measure

Scoring

Rate

Interpretation of Score

Better quality is associated with a higher score

Allowance for Patient Factors

Analysis by subgroup (stratification on patient factors, geographic factors, etc.)

Description of Allowance for Patient Factors

There are eight distinct strata or sub-populations within the Surgical Care Improvement Project (SCIP) Topic Population, each identified by a specific group of procedure codes. The patients in each stratum are counted in the International Classification of Diseases (ICD) Population of multiple measures. (Refer to the SCIP ICD Population in the original measure documentation for further details.)

Standard of Comparison

External comparison at a point in time

External comparison of time trends

Internal time comparison

Evaluation of Measure Properties

Extent of Measure Testing

This measure is currently in use in the Reporting Hospital Quality Data Annual Payment Update

(RHQDAPU) program with data submitted by approximately 3500 hospitals.

This measure is reviewed bi-annually and revised as needed to ensure reliable specifications. An independent abstracting contractor is utilized by the RHQDAPU program to monitor validity of the measure specifications. Feedback from this contractor is incorporated into the proposed changes for each manual update.

Evidence for Reliability/Validity Testing

Reporting hospital quality data for annual payment update (RHQDAPU). [internet]. Baltimore (MD): Centers for Medicare & Medicaid Services; [accessed 2010 May 10]. [1 p].

Identifying Information

Original Title

SCIP-Inf-3: prophylactic antibiotics discontinued within 24 hours after surgery end time.

Measure Collection Name

National Hospital Inpatient Quality Measures

Measure Set Name

Surgical Care Improvement Project (SCIP)

Submitter

Centers for Medicare & Medicaid Services - Federal Government Agency [U.S.]

The Joint Commission - Health Care Accreditation Organization

Developer

Centers for Medicare & Medicaid Services/The Joint Commission - None

Funding Source(s)

All external funding for measure development has been received and used in full compliance with The Joint Commission's Corporate Sponsorship policies, which are available upon written request to The Joint Commission.

Centers for Medicare & Medicaid Services (CMS) funding is from the United States Government.

Composition of the Group that Developed the Measure

The Centers for Medicare & Medicaid Services assembled and maintained the Technical Expert Panel for development of the Surgical Infection Prevention Project (SIP) measures in 2002. The SIP set subsequently transitioned to the Surgical Care Improvement Project (SCIP) effective July 1, 2006. The

panel has been maintained by the Centers for Medicare & Medicaid Services since the inception of the project.

SCIP Partners include the Steering Committee of 10 national organizations who have pledged their commitment and full support for SCIP:

Agency for Healthcare Research and Quality
American College of Surgeons
American Hospital Association
American Society of Anesthesiologists
Association of Perioperative Registered Nurses
Centers for Disease Control and Prevention
Centers for Medicare & Medicaid Services
Institute for Healthcare Improvement
The Joint Commission
Veterans Health Administration

Financial Disclosures/Other Potential Conflicts of Interest

Expert panel members have made full disclosure of relevant financial and conflict of interest information in accordance with the Conflict of Interest policies, copies of which are available upon written request to The Joint Commission and the Centers for Medicare & Medicaid Services.

Endorser

National Quality Forum - None

Included in

Hospital Compare

Hospital Quality Alliance

National Healthcare Disparities Report (NHDR)

National Healthcare Quality Report (NHQR)

Adaptation

Measure was not adapted from another source.

Release Date

2000 Aug

Revision Date

2010 Apr

Measure Status

This is the current release of the measure.

This measure updates a previous version: Specifications manual for national hospital inpatient quality measures, version 3.0c. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct 1. various p.

Source(s)

Specifications manual for national hospital inpatient quality measures, version 3.1a. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2010 Apr 1. various p.

Measure Availability

The individual measure, "SCIP-Inf-3: Prophylactic Antibiotics Discontinued within 24 Hours After Surgery End Time," is published in "Specifications Manual for National Hospital Inpatient Quality Measures." This document is available from [The Joint Commission Web site](#) . Information is also available from the [QualityNet Web site](#) . Check The Joint Commission Web site and QualityNet Web site regularly for the most recent version of the specifications manual and for the applicable dates of discharge.

Companion Documents

The following are available:

A software application designed for the collection and analysis of quality improvement data, the CMS Abstraction and Reporting Tool (CART), is available from the [CMS CART Web site](#) . Supporting documentation is also available. For more information, e-mail CMS PROINQUIRIES at proinquiries@cms.hhs.gov.

The Joint Commission. A comprehensive review of development and testing for national implementation of hospital core measures. Oakbrook Terrace (IL): The Joint Commission; 40 p. This document is available in Portable Document Format (PDF) from [The Joint Commission Web site](#) .

The Joint Commission. Attributes of core performance measures and associated evaluation criteria. Oakbrook Terrace (IL): The Joint Commission; 5 p. This document is available in PDF from [The Joint Commission Web site](#) .

Hospital compare: a quality tool provided by Medicare. [internet]. Washington (DC): U.S. Department of Health and Human Services; 2010 May 25; [accessed 2010 Aug 17]. This is available from the [Medicare Web site](#). See the related [QualityTools](#) summary.

NQMC Status

This NQMC summary was originally completed by ECRI on January 6, 2003. This NQMC summary was updated by ECRI Institute on May 4, 2007 and on October 26, 2007. The Joint Commission informed NQMC that this measure was updated on June 30, 2008 and provided an updated version of the NQMC summary. This NQMC summary was updated accordingly by ECRI Institute on December 11, 2008. The information was verified by the Centers for Medicare & Medicaid Services on March 19, 2009. The Joint Commission informed NQMC that this measure was updated again on October 1, 2009 and provided an updated version of the NQMC summary. This NQMC summary was updated accordingly by ECRI Institute on December 9, 2009. The information was verified by the Centers for Medicare & Medicaid Services on February 18, 2010. The Joint Commission informed NQMC that this measure was updated again on June 25, 2010 and provided an updated version of the NQMC summary. This NQMC summary was updated accordingly by ECRI Institute on August 17, 2010. The information was verified by the Centers for Medicare & Medicaid Services on November 3, 2010.

Copyright Statement

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